

CSE 8A Lecture 12

- Reading for next class: 8.1-8.3: Sounds!
- Today's topics:
 - Logical Operators: ! && |||
- Start PSA 6: Chromakey!



A vote for CSE 8A
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- 1) Solo: (30 sec)
- 2) Discuss/Group: (1 min)

Review: If-statements

Which statement is most true about ONE execution of this code?

```
if (Math.abs (topAv - botAv) < 10)
    topP.setColor (Color.WHITE);
else
    topP.setColor (Color.BLACK);
```

- A. It is possible BOTH Section A AND Section B will be executed
- B. Either Section A will be executed, OR Section B will be executed, but NOT BOTH
- C. It is possible neither Section A nor Section B will be executed.

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(1 min)

Review: If-statements

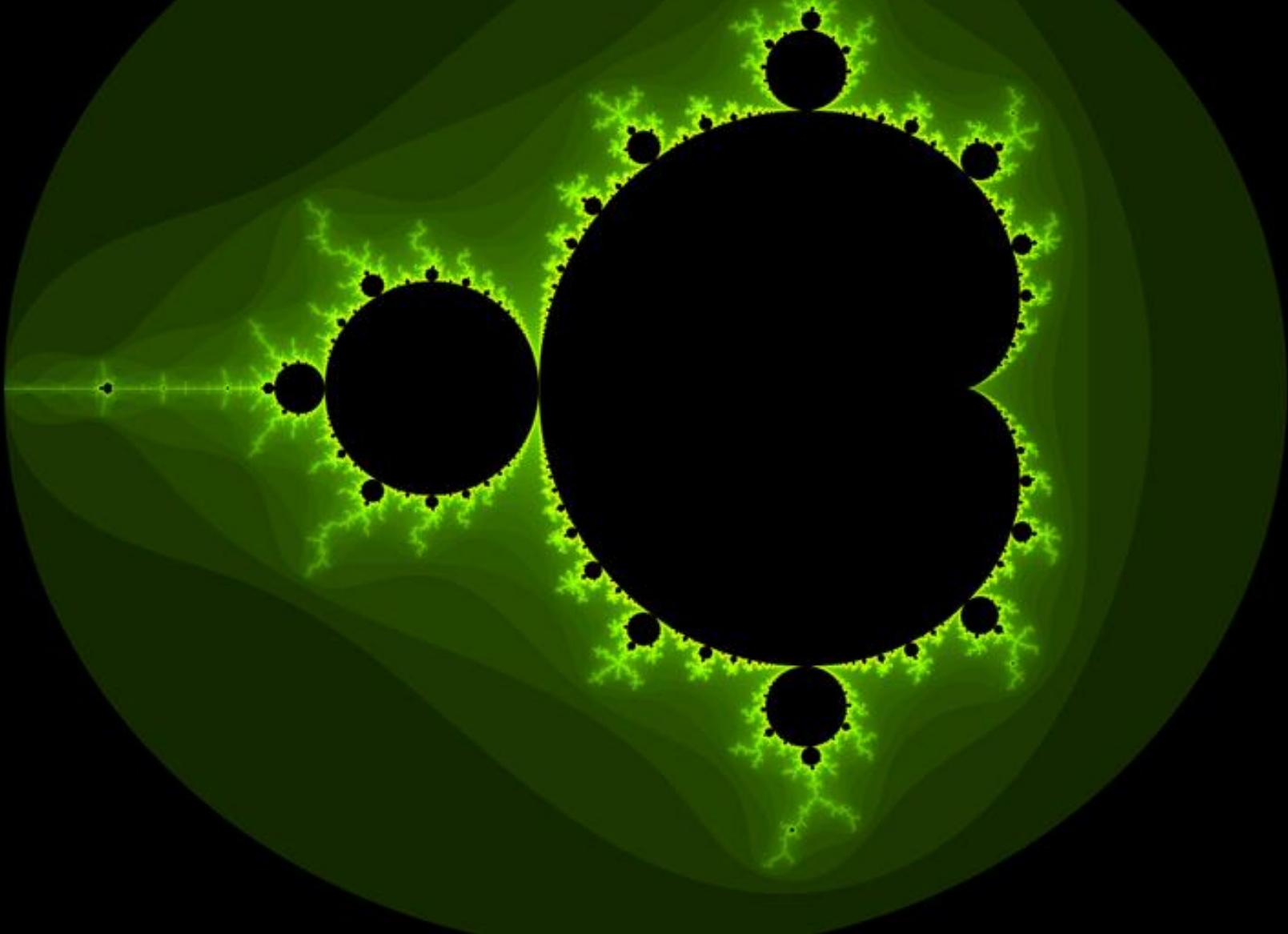
Which statement is most true about ONE execution of this code?

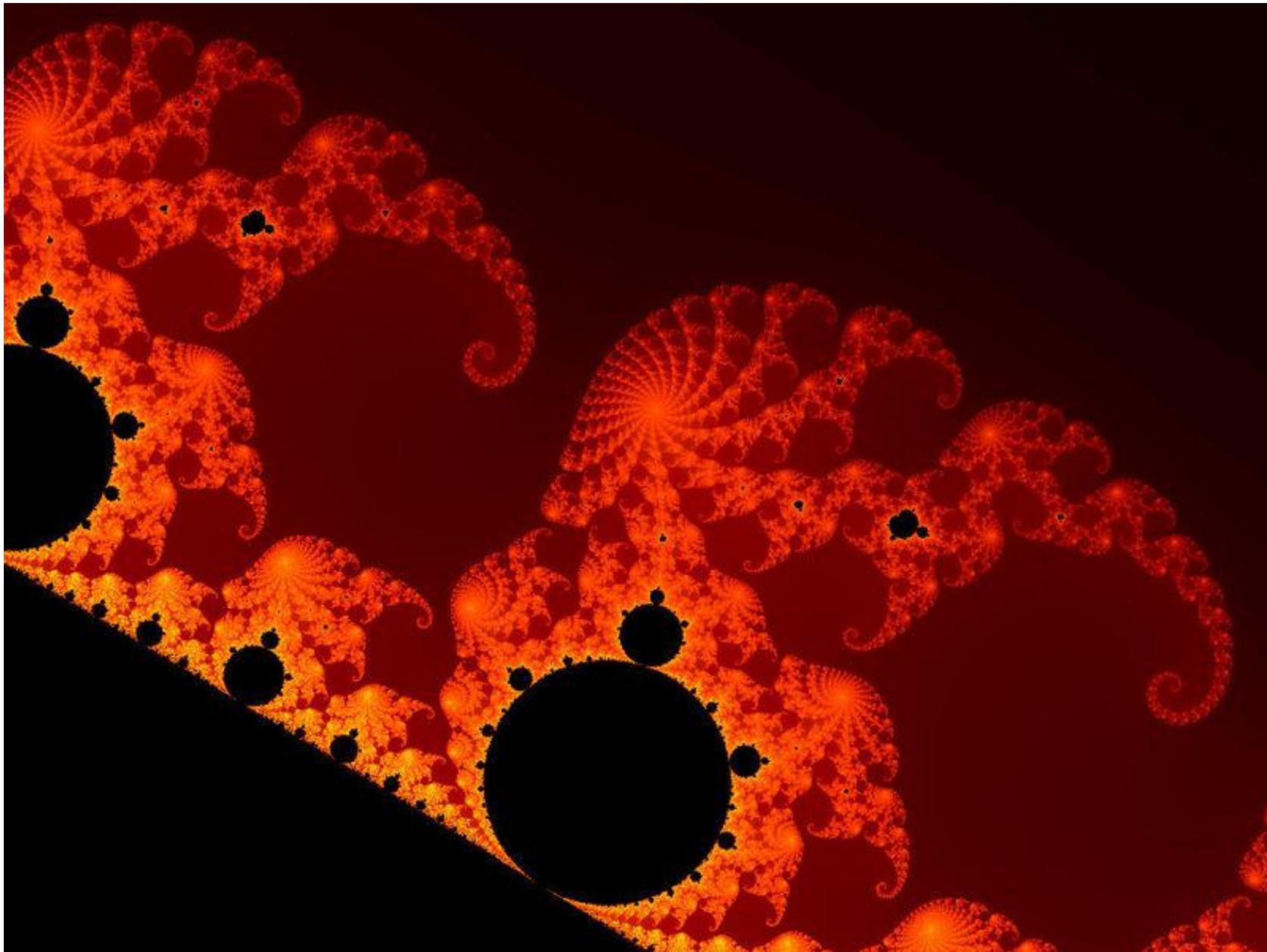
```
if (Math.abs(topAv - botAv) < 10)
    topP.setColor(Color.WHITE);
else if (Math.abs(topAv - botAv) < 50)
    topP.setColor(Color.GREY);
else
    topP.setColor(Color.BLACK);
```

- A. Exactly one of Section A, Section B, or Section C will be executed
- B. It is possible that both Section B and Section C will be executed
- C. It is possible that both Section A and Section C will be executed
- D. It's possible Sections A, B, and C will be executed

Confused? See page 187 for execution flow diagram

If-statements and pretty pictures





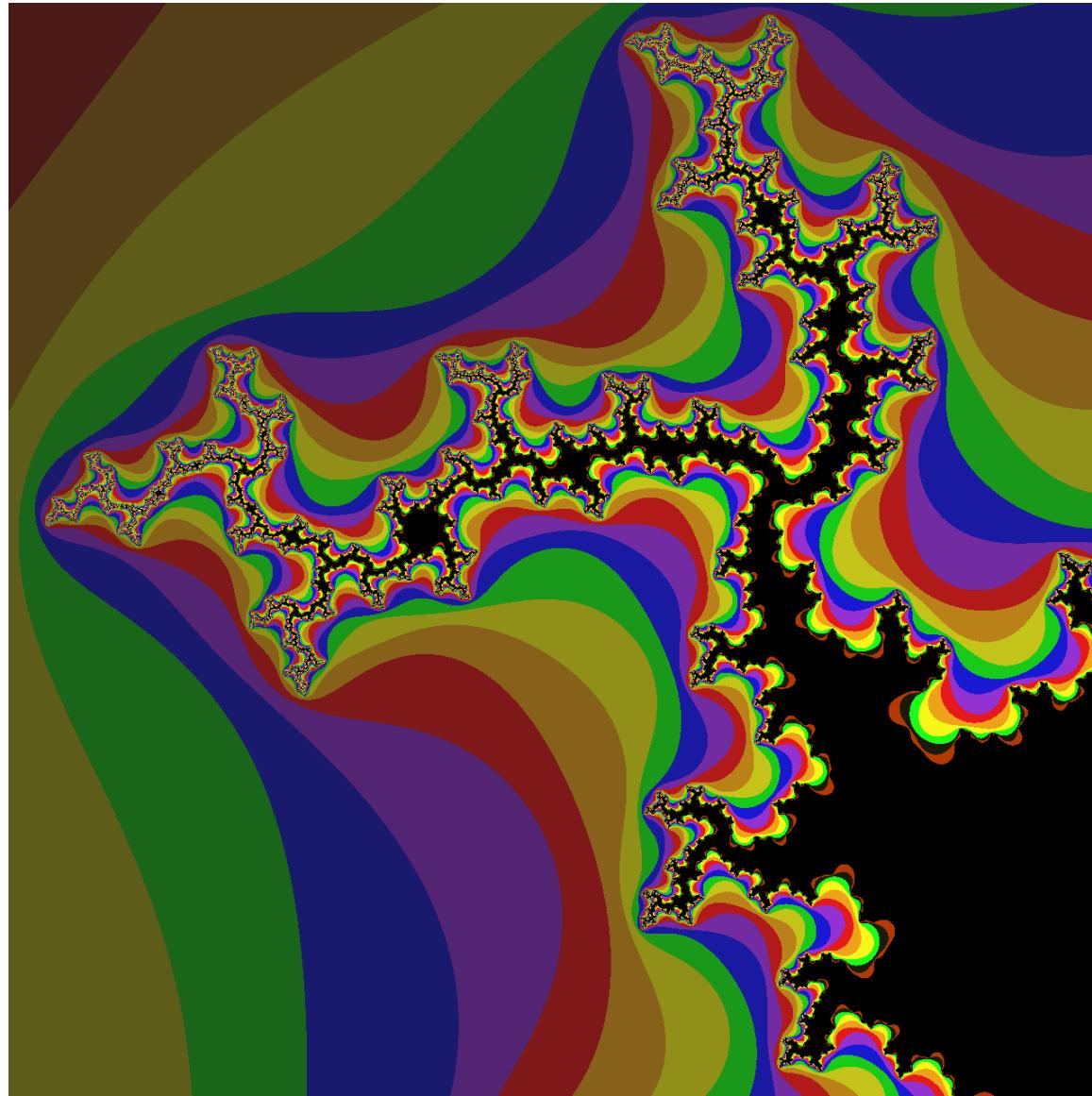


Image courtesy of Aaron Gable, CS 5 Black

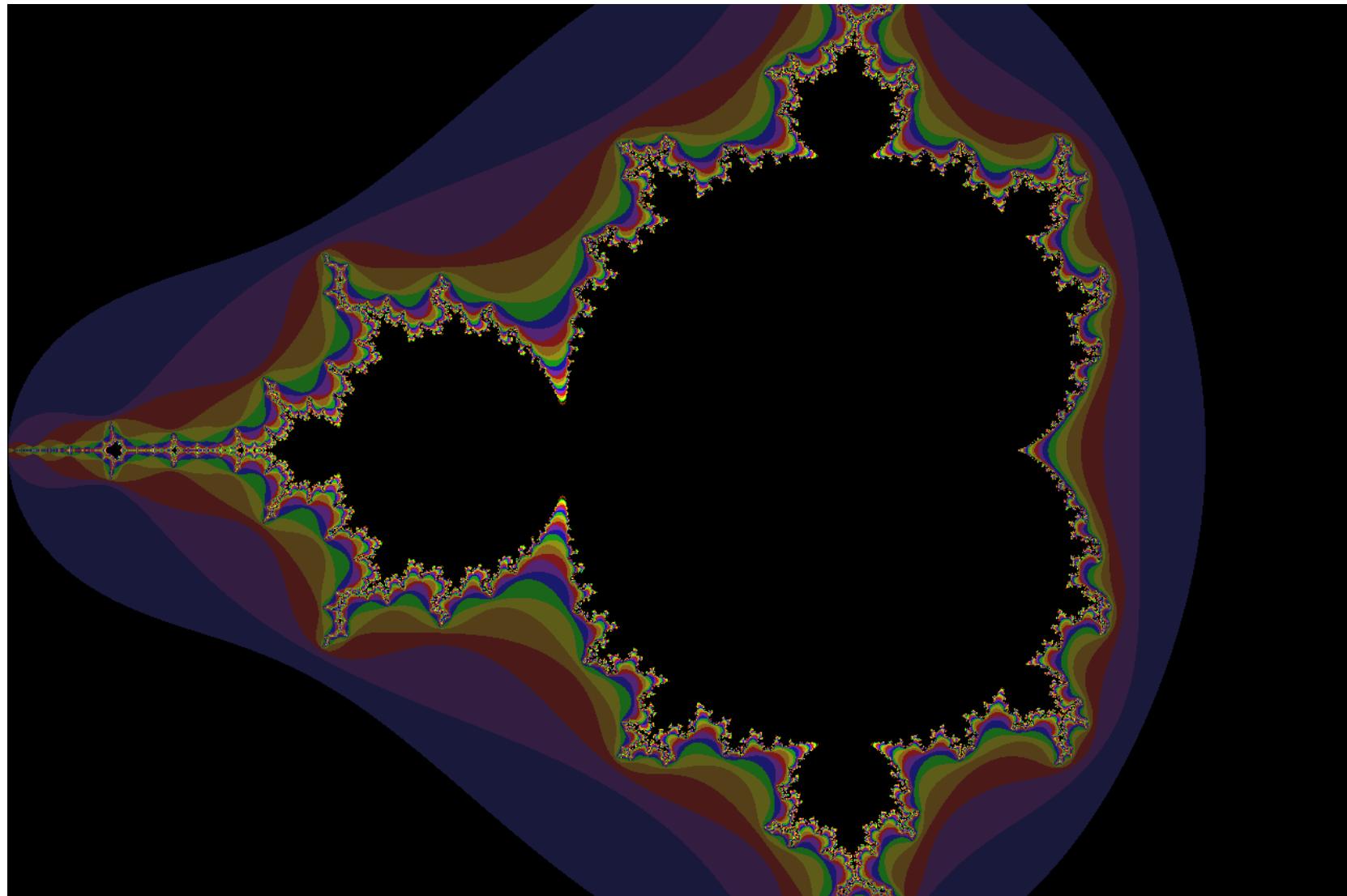
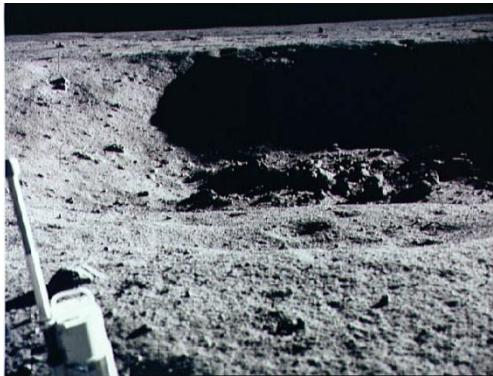


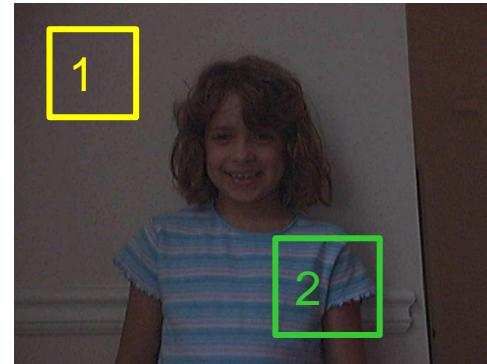
Image courtesy of Aaron Gable, CS 5 Black

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(2 min)

Chromakey: Visit strange new places



background



person (before)



person (after)

In order to create/modify “the person picture” so that it looks like “the after Picture”, from which pictures do you take the pixels in the boxes?

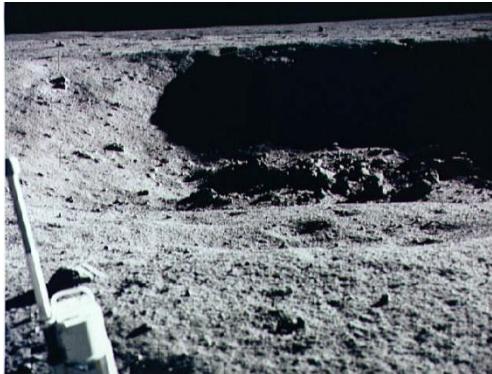
- A. Box 1 (yellow) from background, box 2 (green) from person
- B. Box 1 from background, box 2 from background
- C. Box 1 from person, box 2 from person
- D. Box 1 from person, box 2 from background
- E. None of the above

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(30 sec)

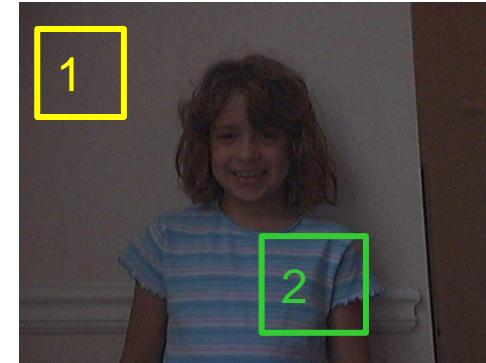
How will you know which part (yellow box or green) you are in?

- A. Condition on the Pixel coordinates (not the color)
- B. Condition on the Pixel colors in background
- C. Depends on the Pixel colors in person
- D. Depends on the Pixel colors in background,
compared to those at the same coordinates in person

background



person (before)



Your chromakey

- Call two chromakey methods:
 - One to replace background
 - One to replace t-Shirt
 - If there are 2 or more people in the picture, you can call more methods – one to replace each t-Shirt with a different background if you like

```
public void chromaKeyBlue( Picture newPicToReplaceBlue,  
                           int blueThreshold )  
{  
    for( int x = 0; x < this.getWidth(); x++ )  
        for( int y = 0; y < this.getHeight(); y++ )  
        {  
            //Do some stuff  
        }  
}
```

OK to edit pictures before the code runs

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(1 min)

Review: If-statements

```
int x = 4;

if( --x < 4 )
    if ( x++ > 2 )
        System.out.println( x + 3 );

if( x > 0 && x < 10 )
    System.out.println( x += 3 );
```

2. What does the code above print?

- | | | | |
|------|------|------|----------|
| A. 7 | B. 6 | C. 7 | D. other |
| 7 | 7 | 10 | |

- 1) Solo: (30 sec)
- 2) Discuss/Group: (1 min)

Review: If-statements

```
int x = 4;

if( --x < 4 )
    if ( x++ > 3 )
    {
        x += 3;
        System.out.println( x );
    }
else
    System.out.println( x );
```

2. What does the code above print?

- A. 3
- B. 6
- C. 7
- D. other

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(1 min)

Review: If-statements

```
int x = 4;

if( x-- < 5 )

    if( x++ > 4 )
        System.out.println( x += 3 );

else if( 2 < x || x < 5 )
    x += 2;

System.out.println( x );
```

2. What does the code above print?

- | | | | |
|------|------|------|----------|
| A. 8 | B. 6 | C. 7 | D. other |
| 8 | | 9 | |

! || && LOGICAL OPERATORS

- **boolean** data type has values: true or false
- **! NOT OPERATOR**

`!false` ---> true

`!true` ---> false

// OR OPERATOR

true true ---> true	true && true ---> true
true false ---> true	true && false ---> false
false true ---> true	false && true ---> false
false false ---> false	false && false ---> false

&& AND OPERATOR

What line of code goes in the blank?

```
public static boolean isValid( int n, int min, int max )  
{  
    if( (min < n) _____???_____ (n < max) )  
        return true;  
    else  
        return false;  
}
```

A. ||

B. &&

C. other

CS Concept: Booleans are values

```
if ( absValZ < 2.0 )  
  
    return true;  
  
else  
  
    return false;
```

Which of the following is equivalent to the above code?

- A. return absValZ;
- B. return absValZ < 2.0;
- C. return absValZ >= 2.0;
- D. None of these

What line of code goes in the blank?

```
public static boolean isAlpha( char ch )
{
    if( ('A' < ch      ____ (1) ____ ch < 'Z')
        _____(2)_____
        ('a' < ch      ____ (3) ____ ch < 'z' ) )
        return true;
    else                                // Necessary?
        return false;
}
```

- A. && && &&
- B. && || &&
- C. || && ||
- D. other

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(1 min)

Review: loops

```
int x = 6;  
  
while( --x > 2 )  
    System.out.println( x - 2 );  
  
System.out.println( x );
```

2. What does the code above print?

- A. 4
 - B. 3
 - C. 3
 - D. other
- | | | | |
|---|---|---|--|
| 3 | 2 | 2 | |
| 2 | | 1 | |
| | | 2 | |

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(1 min)

Review: loops

```
boolean b = false ;  
  
while( b == true )  
  
    System.out.println( "hi" );  
  
    System.out.println( "bye" );
```

2. What does the code above print?

- A. hi
- B. bye
- C. hi
 bye
- D. other
 hi

- 1) Solo: (30 sec)
- 2) Discuss/Group:
(1 min)

Review: loops

```
boolean b = false ;  
  
while( b = true )      // careful  
  
    System.out.println( "hi" );  
  
    System.out.println( "bye" );
```

2. What does the code above print?

- A. hi
- B. bye
- C. hi
 bye
- D. other
 hi

What line of code goes in the blank?

```
public static void readValidAge( )
{
    int      age;
    Scanner scan = new Scanner(System.in); // Keyboard input

    do
    {
        System.out.print("Enter your age:  ");
        age = scan.nextInt();
    } while( _____(1)_____ );
}
```

A. (age > 0) || (123 > age)

B. (age < 0) || (123 < age)

C. (age < 0) && (123 < age)

D. other

What line of code goes in the blank?

```
public static void main( String [] args )
{
    int answer;
    Scanner scan = new Scanner(System.in); // Keyboard input
    do
    {
        /* Some code here */
        System.out.print("Want to repeat program (1:yes 2:no 3:NO) ? ");
        answer = scan.nextInt();
    } while( _____(1)_____ );
}
```

A. (answer != 2) || (answer != 3)

B. answer != 1

C. (answer != 2) && (answer != 3)

D. other

Summary of Concepts

- if-statements
- Logical Operators
- Loops Review

TODO

- Reading for next class: 8.1-8.3 (Sounds)
- Start PSA6

